**Supplementary file 3**

**Table 1: Profile of the participants selected for Key Informant Interview**

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| --- | --- | --- | --- | --- | --- |
| **Serial no** | **Gender** | **Category** | **Occupation** | **Experience**  **(in yrs.)** | **Venue of interview** |
| 1 | female | KII | Gynaecologist | 4 | Personal cabin |
| 2 | female | KII | Public health nurse | 15 | Personal cabin |
| 3 | female | KII | Junior resident | 2 | At PHC |
| 4 | Male | KII | Junior resident | 3 | At PHC |

**Table 2: Profile of the participants selected for In Depth Interview**

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| **Serial no** | **Gender** | **Age**  **(in yrs.)** | **Category** | **Occupation** | **Venue of interview** |
| 1 | Female | 35 | IDI | Tailor | At shop |
| 2 | Female | 48 | IDI | House wife | At home |
| 3 | Female | 39 | IDI | House wife | At home |
| 4 | Female | 40 | IDI | Housekeeping staff | At PHC |
| 5 | Female | 17 | IDI | School going | At home |
| 6 | Female | 19 | IDI | College going | At home |

**Table 3 shows participants’ perceived barriers in HPV vaccination**

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| **PERCEIVED BARRIERS** | | |
| **CATEGORIES** | **CODES** | **VERBATIM QUOTES** |
| Lack of Awareness | About HPV and its link to cervical cancer | * *I never heard about this virus, I heard about cervical cancer but I never heard about HPV, I know HIV only, both are same? – AGM* * *Their level of knowledge will be very low. First, I think there is a need to make them aware that the HPV infection causes cervical cancer. I don’t think they even know about it – Gyn* |
| About HPV vaccine. | * *A lot of people in my surroundings were not aware of the availability of this vaccine to prevent cervical cancer; when I asked, even doctors were surprised and asked me how I came to know about it. – AGM* * *I think everyone should know about this vaccine. I told about this vaccine to two to three people I know well, but they do not understand me - AGM* |
| Among Healthcare providers' | * *I wondered why a nurse in Ramanathapuram Hospital was unaware of this vaccine, and she told me to ask JIPMER main hospital – AGM* * *Yeah! I have asked area sister about the reasons for getting this cancer? They advised to take bath twice a day, follow hygiene practices, eat healthy and consult a doctor immediately when you are not well – AGM* |
| About causative factors | * *Yes, I heard about it. There is something like food habits, heredity and relative’s health, and somebody saying it can be from medicines through infections; I screened for cervical cancer now – AGM* * *I don’t know about the causative factors and reasons for this cancer; I think if we educate people, they will definitely accept vaccination – AGM* * *Tobacco is the main cause of cancer. Even my mother used tobacco, and hence, she got cancer and she had a hysterectomy – AGM* |
| About disease and prevention | * *They are aware of any irregular menstruation, abnormal bleeding and vaginal discharge; other than that, they are not much aware of the cause - HCW* * *I don’t know how to prevent this disease and how will get that disease; is it get affected through food? if someone gives awareness about its prevention and other details, that will follow that, if someone educates us and provides awareness classes, then only then will we know more about this disease and how to prevent it. – AGM* |
| Lack of recommendation from HCP | Lack of awareness efforts due to vaccine unavailability | * *We are providing health education classes about cervical cancer the importance of cervical cancer screening and, but we are not giving awareness about HPV vaccination to prevent cervical cancer. because that vaccine is not available in the govt supply; if it is available, then only we can conduct awareness among the public- PHN* |
| Fear and Misconceptions | Fear of side effects | * *Many literate women refuse to take the HPV vaccine because of its side effects. Reactions, immediate side effects and all, so in that condition, I think other people and are not willing to take it; they don’t have much awareness – Gyn* * *Because these vaccines are newly introduced so it will take some time to accept vaccine and I will wait for some time to ensure there is no side effects, if there are no side effects surely our acceptance of vaccination will increase – AGM* |
| Misconception about vaccination related side effects | * *Parents do believe that if their daughter is vaccinated for cervical cancer at a young age, it may affect their fertility, much education and awareness is needed among parents, if they are convinced, only they will convince their adolescents to undergo vaccination – Gyn* * *I’m afraid of side effects, difficulty in conceiving, infertility reasons, effects on the period cycle, and the chance of getting any tumours - AG* |
| Misconceptions about vaccination | * *I’m tailor, so many brides will come to me to stitch clothes; I'll tell brides who are very friendly to get HPV vaccination before marriage, but they do not believe this. They are afraid that something will happen to them with this vaccination – AGM* * *They think if they come to doctors, they will get some new diseases, I will get infection because I’m going to hospital and “ithu potta thanipayidumo” they think that whatever problems occur post vaccination are its side effects vaccination, it’s very difficult to change that thought – AGM* * *There will be the chance of thinking that this vaccine can cause risk during delivery, think it will increase bleeding, they will be very concerned about side effects, so it is important to create awareness about possible side effects. With the word “cervical” itself, they will start thinking it will be related to birth – PHN* |
| Fear of stigma related to sexual activity | * *I am also afraid that people might think that I’m receiving vaccination because I’m sexually active and so I’m in fear of contracting this disease - AG* |
| Fear of injections and pain | * *There will be a chance that some people will reject the vaccine because of fear of injection and pain; not everyone thinks alike - AGM* |
| Newness of vaccine | Time needed to accept new one | * *Because these vaccines are newly introduced so it will take some time to accept vaccine and if there are no side effects surely acceptance of vaccination will increase - Gyn* * *We were initially afraid of COVID vaccination, because it was new to us. But after that, during second wave I got afraid of covid and took injection - AGM* |
| Cost Concerns | Cost as a barrier | * *Cost of the vaccine is very high and less awareness about the vaccine, if aware also everyone can't get the vaccination from private because of fear of side effects, and its high costs- AGM* * *The cost of one vaccine is around Rs. 2000, it’s a big amount for a middle-class family like us – AGM* * *I asked about this vaccination to doctor in a nearby private hospital, but the rate of that injection is very high, so I didn’t vaccinate my daughter till now – AGM* * *I think if it is freely available or available for low cost, we will vaccinate, everyone will think twice to spend big amount for something, every family here will think like me only – AGM* |
| Accessibility issues | Accessibility issues in rural areas | * *Even if it comes under UIP and reaches a small population, villages are still very difficult Okay, many people who are educated and have knowledge about it at a higher level might benefit from it. but for people who are in small populations and villages, I don’t think the vaccine will reach them, and it is difficult to convince them to get vaccinated - Gyn* |
| Distrust in Private Sector | Preference for government healthcare facilities | * *Yes, I heard about vaccine, but it is only available privately, not in the government. I'll wait till it is available in govt because I don’t have belief and am not satisfied with private; I'll vaccinate my daughter once it's available in govt- AGM* * *Less awareness about the vaccine, if aware also everyone can't get the vaccination from private because of fear of side effects, for me, belief in government is higher than private. we all depend on government hospitals for all our needs. I have a bad experience with private hospitals- AGM* |
| No trust in private sector | * *I have never vaccinated my child in private till now, And I think if this vaccine is available in govt, I will feel safe to provide it. I will wait for some months then; if I don’t get it in govt, then I'll go for a private hospital- AGM* |
| Bad experience in private sector | * *I Never get vaccine from private, I don’t have belief, because I’m diabetic and went to private hospital for treatment, l followed their advices and took medications but sugar level never get down, they selling medicine for business I didn’t get any relief from tablets prescribed from private hospital- AGM* |
| Equity Concerns | Need for government provision | * *It won’t be fair if we get vaccine only from the private sector. We should serve all the people equally, because all our lives are important to the government- AGM* |
| Hesitancy | Fear and hesitancy in seeking care | * *The people of here are aware of this disease. But people, especially women, are afraid to consult doctors. People die more from depression because of this disease. They commit suicide thinking that they are not going to live further after getting cancer. We should have regular checkups- AGM* * *Barriers in screening are they are afraid of and hesitant to take the test, they are afraid the test will be positive, it is not a convenient procedure for screening, and they fear that the procedure is painful. and people think what others will think. If they see other people taking service, they will also join – JR* |
| Hesitancy in discussing health issues | * *Few people are not open to their doctors in addressing their health problem. Few are okay with female doctor nowadays. It should not be the scenario. It is about our body; we should explain to both male and female doctors without any discrimination. Even the elderly people at home should not be neglected. If they complain of stomach ache, they should be taken care of. Then we can solve the problem- AGM* |
| Community Influence | Peer influence | * *……...overcome by seeing others also taking tests and results coming as negative; uptake is improved after awareness. A separate intern is posted for this. Whoever eligible population is coming will be given counselling and taking smears for willing ones. So it increased service uptake; previously, some random people would get counselling. Now Asha ANM is in the field also mobilising people and spreading the words like this: people are taking service you also take, and this also helps to improve service- JR* * *In village misconceptions and thoughts are high,10 people use 10 words, like do hear me don’t get vaccine, if u get some infertility problem, back pain, or chance for any problem to my daughter or her baby in future …………. don’t take it – AGM* |
| Difficulty in personal outreach in urban areas | * *In the town area, it's difficult to personally connect with people and inform them about vaccines; this is not a village; in the village, 10-20 people will be together, so we can easily communicate with them. in town, we don’t even know our neighbours- AGM* |
| Need for Education | Need for awareness at workplaces | * *More than willingness, they don’t have time to take because they are more worried about their work. So, we should create awareness that health matters more than economic status. Even if they fall sick, they pay 500 or 1000 rupees, take medicines and move on. We should create awareness even at the workplace of women. Because they give priority to money than their own health So the awareness should be given by the workplace itself, which will be better- AGM* |
| Need for education and training of healthcare workers | * *First, we need to provide education and motivation to health care workers in grassroot level and improve their communication skills Now their knowledge about cervical cancer is improved after cervical cancer is included in opportunistic screening, but about vaccination, they are not much aware of it- JR* |
| Preference for Natural Immunity | Preference for natural immunity & Refusal of vaccinations | * *some families were hesitant in our service area, they will say that already have natural immunity in their body, follows naturopathy, and not accept vaccinations, and will refuse our services - PHN* |

**Table 4 shows participants’ perceived benefits in HPV vaccination**

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| **PERCIEVED BENEFITS** | | |
| **CATEGORIES** | **CODES** | **VERBATIM QUOTES** |
| Trust on vaccines in general | Belief in safety like other childhood vaccines | * *I have belief on vaccinations I was very confident I had given all known vaccines for my child from childhood onwards, so my kid is good and healthy, I was in Chennai, so I know about all vaccines, I think this vaccine is also safe like that- AGM* * *Many people who didn’t take up the vaccination only died more than those vaccinated. So, it is not wrong to get vaccinated- AGM* |
| Trust in COVID vaccination | * *Yeah! I believe. Even during COVID, they found vaccination. Many people died without taking vaccination and many died even after taking vaccination, but that depends on their health status. It is not against the nature- AGM* * *Even in my family, we lost a couple who are educated, being a teacher, they didn’t take the vaccination and died of COVID. It affects their children as well. Even if they die after taking vaccination, it is not a problem. No one knows their lifetime; they would have taken the vaccination. They didn’t have the courage to take it- AGM* * *During covid time; everyone told me not to get vaccinated against covid, even my family told me, but I’m sure that I must take vaccination and get vaccinated, my relatives told me it would affect nerves, there will be some side effects. Still, I convinced them and took covid vaccination- AGM* * *We didn’t face any side effects due to COVID vaccination but my mother’s sister got bleeding issues. It was an exaggeration of some other genetic disease; she got admitted to JIPMER, and now she has been cured. But I’m not afraid of that, and it’s because of her genetic condition- AG* |
| Trust in Government Services | Trust in experienced government doctors | * *I think only experienced doctors are available at govt hospitals. so, my belief in government hospitals is more compared to private hospitals. my belief in medicine provided by govt providers is high. I will accept more if it is provided by govt- AGM* |
| Belief in government-provided medicines | * *Any treatment doing for money there added cost will be high, I heard like that, I won’t believe totally but I will believe if I know well, I believe govt more because I’m surrounded by govt facilities, I know well about the difficulty facing by govt setup to make a medicine. Lot of people wasting that because of low knowledge, I see everything here so I have more belief in govt system- AGM* * *Yeah! I am willing to give her vaccination. We should vaccinate the children especially growing children. It will be better if done by the Government- AGM* |
| Trust in government instructions | * *If we follow government instructions, we can prevent it. We should maintain personal hygiene, and if some symptoms and problems occur, we must visit a government hospital. don’t wait by ourselves. First, we must consult a doctor and follow what they tell us. then we have to check how everything's going- AGM* |
| Belief that government won't harm people | * *I will take the vaccination because the government will never harm their people. People are their wealth. So, I believe in vaccination. The government will not work against the people as the girl children and even boy children are its wealth. So, it will be good- AGM* |
| Higher trust in government facilities, | * *People should believe in government services. Even if we have issues in other sectors, the medical department will never do any harm to us. Because only if we vote, they can do govern us- AGM* |
| Trust in HPV vaccinations | Belief in vaccinations for cervical cancer | * *There is a vaccination available for that. and I happened to read that that vaccination is like other vaccinations and is safe, so I thought about vaccinating- AGM* * *I don’t have any doubt about this vaccine -AGM* * *I heard some vaccination available for cervical cancer. but I don’t know more about that, if it prevents disease ill surely vaccinate my daughter, I don’t know is there any side effects for this vaccination, ill vaccinate if health workers tell its safe- AGM* * *I didn’t have a fear to get the vaccine- AG* * *If they see people who are taking vaccines are free of side effects, then they will accept it, especially we are talking about adolescent girls; they will be more concerned about it – PHN* |
| Recognizing importance of prevention and Screening | Recognizing importance of prevention | * *Because I am 50 years old, we have faced and overcome various health issues. Our parents never had this chance; if they had known, they would have used it for us. And now we know what is right and wrong, so we should not neglect this- AGM* |
| Desire to prevent daughter's suffering | * *I went to JIPMER for some health issues. I saw that there are a lot of tests for this conducted there, but I didn’t take the test. Those taking the test, I saw they were shouting. Seeing that, I thought like, I don’t want something like this to happen to my daughter, so I thought for her safety, I would definitely vaccinate her- AGM* |
| Responsible parenting | * *I’m working in a hospital in housekeeping.so I’m in fear that chance of get all the infections high if we did take proper care, so I'll take all preventive measures. I did cervical cancer screening and tests, and I'm the one who takes care of my daughter, I want to be a responsible mother- AGM* |
| Belief in prevention through screening, | * *Yeah! I have heard about this. Yeah! We get Cervical cancer because of excess white discharge, multiple sexual partners and unclean practices. Unmarried women get cervical cancer because of white discharge, and married women get disease because of their partners. So, if we prevent or treat white discharge, we can prevent the disease. Yeah! Having Many children may also result in cervical cancer as their health worsens- AGM* |
| Importance of regular screening | * *Yeah! We should advise that you don’t neglect these organs that you have given birth to children and it’s over. Regular checkups are must done every year to prevent the disease. If we have money, we can go to private clinics for checkups; if not, the government is providing screening service free of cost, so we can avail of those services. Many awareness campaigns can be done- AGM* |
| Belief in prevention through vaccination and screening | * *Yes, I heard about it. my mom is a nurse in palliative care. She told me about that. It happens due to infection with a virus. If we consult a doctor regularly, we can cure it. For prevention, if there is a vaccine available, it will be better; I have never heard about a vaccine- AG* |
| Role of awareness and education | Assurance from trusted sources could improve acceptance | * *I’ll tell my daughter to get vaccinate, she will ask me back that, is it necessary? So, if I assure her that it’s really worth to get this vaccination and if physicians assure her about safety and efficacy of vaccine, she will accept it for sure – AGM* |
| Education could build trust in new vaccine and improve uptake | * *There will be some perceived risk of side effects; I think the main concern will be education. If we give them proper education, they will take the time to build trust in the new vaccine and uptake the service – HCP* |
| Peer Influence | Peer influence could increase acceptance if no side effects observed | * *If they see people who are taking vaccines are free of side effects, then they will accept it, especially we are talking about adolescent girls; they will be more concerned about it- PHN* |
| Awareness from Healthcare Providers | Awareness from healthcare providers and educational materials | * *Yes, sister at Ramanathapuram hospital told me about that disease, also from the hospital, and I read some wall posters- AGM* |
| Less worry about Side Effects | No worry about side effects | * *About Vaccination No! It is not a worry at all. It is good for all. Many people die of committing suicide and various other unexpected reasons. It is in the hands of God. But dying of disease is not right, it is better to take vaccination to prevent the disease. We should show concern towards the treatment- AGM* |

**Table 5 shows participants’ perceived threats in HPV vaccination**

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| **PERCIEVED THREATS** | | |
| **CATEGORIES** | **CODES** | **VERBATIM QUOTES** |
| Perceived susceptibility | Fear of unknown diseases | * *I’m confident about this vaccine, they must take. because the newer generation is affected by many different infections, we don’t know who will get which disease. It is difficult to predict; the whole future is affected by the process of identifying diseases. In that kind of fear, we took covid vaccine for safety- AGM* |
| Perceived high susceptibility due to lifestyle and environmental factors | * *There is less chance of getting protected naturally with healthy practices, the pollution, and artificial additives in foods, I fear that all additives added to food can cause these cancers even there is lot of changes in lifestyle of this generation -AGM* |
| Belief in prevention through vaccination | * *I believe in this vaccination because I’m afraid that in future, once I contract this disease, I can't avail of vaccination, so it is better to prevent it early by getting the vaccination -AG* |
| Low perceived susceptibility | * *I think that there is no need of vaccines, because I’m healthy, and I’m good. If I vaccinate there is chance to get some problems, so better not to vaccinate, “njan nalla thane irukku, enikku ethukku, theva kedayath”, “pottatinale than chilla prachana varum, athinale podame irrikkaruthu nallathu”- AGM* |
| Perceived Severity | Perceived severity of cancer outweighs concerns about side effects | * *I don’t know if there are any side effects, but I think the rest of the problems are better than getting cancer AGM* |
| Desire to avoid the disease | * *I think it’s better I am not affected by this disease - AGM* |
| Perceived severity of cervical cancer and tumours | * *I heard that there are a lot of cancer cases; cervical cancer is a serious disease, and a tumour in the uterus will be a serious one, if it’s there outside also there will be some treatment- AGM* |
| Understanding stages of cancer, | * *The uterus is one of the important organs for girls, and if it gets infected and gets cancer, it is very serious; I think there are stages for cancer at 1st and 2nd stage, is curable and difficult cure in 3rd and 4rth stage. It better to consult doctor early. cervical cancer can be prevented now, but in future, there is a chance of getting the disease.so I support vaccination to prevent disease, and my mother also supports- AG* |
| Perceived severity leading to sudden death | * *Yeah! We get the disease, and it is silent, and we die suddenly of the disease without even knowing- AGM* |
| Perceived severity and difficulty in treatment, Suffering | * *it's very difficult to treat disease. if we can prevent it before the onset or early detection, it will increase the survival duration. if we identify at a late stage, it's very difficult to treat and results in body pain, suffering and financial suffering- AGM* |
| Importance of regular screening due to perceived severity | * *Yeah! We should have a regular checkup. Above 30 years, after giving birth, we should check them at least once in a year. Because even other diseases like heart disease, and other diseases we can manage, but cervical cancer is deadly, we should have frequent regular checkup once a year- AGM* |
| Unawareness | Lack of awareness about susceptibility and severity | * *They are not exactly aware of how this cancer comes or why we should take the vaccine, even if the vaccine is available or not; they are not very sure of that till now, but the name of the cancer they perceived as it a high risk and but they don’t know they are susceptible for it or they are at high risk for it. they have very less awareness about it - HCP* * *our area people do not accept cervical cancer screening tests, and they will excuse that there is no history of cervical cancer at home, my mother and grandmother not having this disease and they feeling awkward to get the test done- JR* |
| Lack of awareness about HPV and the vaccine | * *The cervical cancer itself, people are not much aware of it; I don’t think they will even have an idea about the HPV and HPV vaccine - Gyn* |
| Personal Experiences | Awareness of local cases of cervical cancer and mortality | * *I heard about an old woman from our village affected with cervical cancer, but I didn’t see her, and I heard that a lot of such cases are there and heard about some tests for that - AGM* * *I heard about that person who had cervical cancer and died – AGM* |
| Personal experience with a family member's cervical cancer | * *Yeah! My mother had cervical cancer. Later she got cured – AGM* |
| Awareness of suffering from cervical cancer | * *I don’t know directly, but I heard from my mom about someone who has this disease and sufferings she faced- AG* |
| Awareness about premature death and family hardships | * *Yeah! We should definitely vaccinate them because there are many women who have died in their young age, living their children. The reason is they die mostly of cervical cancer. Others are not aware but their close relatives only know that they died of cervical cancer. So, we should have a regular checkup. If we extend their survival period, they can take care of their children and their family as well – AGM* |

**Table 6 shows participants’ cues to action in HPV vaccination**

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| **CUES TO ACTION** | | |
| **CATEGORIES** | **CODES** | **VERBATIM QUOTES** |
| Family and Peer Influence | Family awareness | * *I think if ladies got awareness in the family, the whole family is getting awareness - AGM* * *If I tell my family and friends about this vaccination, they will hear me because I’m working in a hospital. first, I will make my daughter get vaccinated, then I will tell them, I’ll wait for 3 months and tell all relatives to get vaccination for their daughters – AGM* |
| Peer influence | * *For screening if they see surrounding people willing to take, they are also willing. If we call in the group, they are more willing to take service up. They need support- JR* |
| Positive Experiences | Positive experience with other vaccinations | * *In my family, no one suffered any side effects from other vaccinations, so I have no fear to vaccinate my daughter – AGM* |
| Healthcare Provider's Role | Mental support from provider | * *I heard this vaccine is 90-100% effective in preventing cervical cancer from a doctor, so I believe in that- AGM* * *Before planning to get vaccination for my daughter, I'll consult a doctor and talk with him so I will feel comfortable. I need to clear doubts about side effects and the effectiveness of vaccines if I vaccinate now, my daughter at a very young age, how many months its effect will last. is there any chance of getting the disease, and is there any need for one more jab. I have little worries about side effects. But while consulting the doctor, I'll clear all doubts; if he says ok, I'll be free of tension- AGM* * *We will avail HPV vaccine after consulting a doctor. I need mental support from the provider, that will help me to choose- AGM* |
| Need to consult physician about side effects | * *I have no doubts in vaccine, but I need to talk with physician for 5 min before vaccinating my daughter (side effects/ power/ effective/ how long lasing it is) these are some of my concerns need to clear. If I got satisfied, I’ll vaccinate my daughter – AGM* * *After reading about that on the internet, I talked with the doctor. he told me it's effective and safe and to vaccinate my daughter……... I’m waiting for that 12000rs to get ready for vaccinating her in private- AGM* |
| Awareness and Education | Need for awareness to address misconceptions and build trust | * *If suddenly introduced one vaccine and asked them to get vaccinated, no one will accept it. if we give proper awareness, they will understand that quality is there with most people, and it's important to clear their misconceptions and doubts, and then they will start to believe- JR* |
| Education about vaccine effectiveness could improve acceptance | * *If we educate them that this has around 90% protection against cervical cancer, maybe people will accept.- Gyn* |
| Role of Medias | Awareness from internet, | * *Yeah, I heard about cervical cancer, I heard about that from the internet- AGM* |
| Awareness from mobile phone | * *From my phone, I learnt that with this injection, we could prevent cervical cancer- AGM* |

**Table 7 shows participants’ self-efficacy and vaccine response efficacy in HPV vaccination**

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| **SELFEFFICACY (CONFIDENCE IN ABILITY TO PREVENT WITHOUT VACCINATION)** | | |
| **CATEGORIES** | **CODES** | **VERBATIM QUOTES** |
| Diet and Nutrition | Providing healthy homemade food | * *I think to an extent can prevent this disease by giving healthy foods to my daughter. now adays I only prefer homemade food, very rarely have food from outside- AGM* |
| Personal Hygiene and Cleanliness | Importance of personal hygiene and cleanliness, | * *Like few people may have to go for work early, so they eat without taking bath and don’t have time. Few areas of society, people will have time to take care of their children and they will be clean, eat after taking bath. The ultimate aim is to be clean and take care of our body, it is not about our cultural or caste differences- AGM* * *We should follow hygiene practices, keep our surroundings clean and follow proper diet- AGM* * *We should keep ourselves clean and take a bath twice daily, always clean our private parts after reaching home, will use v wash to clean our private area after coming from school and outside places, and do what all we can to keep ourselves clean, washing with hot water and salt- AGM* |
| VACCINE RESPONSE EFFICACY (CONFIDENCE IN ABILITY TO PREVENT WITH VACCINATION) | | |
| CATEGORIES | CODES | VERBATIM QUOTES |
| Confidence in HPV  vaccine ability | Confidence in vaccination | * *It's good that a vaccine is available for cervical cancer, but there shouldn’t be any side effects; if we get good awareness about vaccination, we will be willing to vaccinate- AGM* * *I don’t want my daughter to suffer, if vaccine is available, I’ll definitely vaccinate my daughter- AGM* * *I believe in this vaccination, because science development is very high now a days, I gave all vaccines I know to my daughter- AGM* |

**Table 8 shows participants’ perceived barriers in HPV vaccination perceived challenges and way forward to improve in HPV vaccination**

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| CHALLENGES FOR HEALTHCARE PROVIDERS HPV VACCINATION | | |
| CATEGORIES | CODES | VERBATIM QUOTES |
| Lack of Knowledge & Awareness | Lack of knowledge about HPV vaccine | * *They don’t know about vaccines and pap smears; now knowledge about cervical cancer is improving, and people are voluntarily willing to come for screening, regarding vaccination, still very poor knowledge among the community- JR* |
| Lack of perceived need | * *There is a lack of felt need for this vaccination because they are unaware of the importance and burden... we know that COVID vaccination rate has improved with the knowledge everyone is susceptible to the disease. uptake increased after the second wave after a lot of deaths occurred. I felt the need for awareness is more important – PHN* |
| Need for Education & Awareness Programs | Need for education about HPV vaccine | * *There is a need to educate about the availability of vaccination, and bringing knowledge about vaccines will take a while. now, whatever vaccination they routinely give, they will be aware of that; apart from this, we need to educate about that- PHN* |
| Repeated messaging | * *We need to explain repeatedly about severity of cervical cancer and related consequences- Gyn* |
| Need for awareness | * *If it is introduced, then only we can create awareness in the public. Then, they will have better knowledge about this vaccine, and only then will they get vaccinated. Acceptance of vaccination needs a lot of awareness- PHN* |
| Vaccine Hesitancy & Social Influence | Vaccine hesitancy | * *Refusal is very common with the introduction of new vaccines. then, with time, they realise and accept that vaccines can prevent particular diseases, and they will fear that everyone is getting vaccinated, but they aren’t, then they will start accepting vaccination…- PHN* * *There was a lot of refusal. Still, we motivated them by telling them that vaccines saved many lives and that the minor side effects would diminish with time. and we explain the severity of the disease and the death rate; if we talk about the severity of the disease, their acceptance and understanding will be better - PHN* |
| Social influence | * *During screening camps even if they understand what we speak, they have some inhibition and wait for someone to get done first. If someone gets done first, the next person immediately starts following – JR* |
| Need for Motivation | Need for Motivation | * *It needs a lot of motivation and support for initiation. there was a lot of refusal. Still, we motivated them by telling them that vaccines saved many lives and that the minor side effects would diminish with time- JR* |
| Role of Government Programs | Need for government program | * *There is no public awareness created among people, and the state govt has not yet introduced this vaccine. If it is introduced, then only we can create awareness in the public - PHN* |
| Difficulty in accepting new service | New service | * *Now only we started creating awareness, public won't accept new things suddenly, there will be negligence, we need to explain repeatedly about severity of cervical cancer and related consequences- PHN* |
| Targeted Population Groups | Target adolescents and parents | * *In the current generation, there are high-risk behaviours; with a focus on parents, we can focus on the adolescent group; they will be less hesitant – Gyn* |
| Target adolescents | * *We have to create awareness at the health centre level, and select an eligible group (adolescents) and its necessary to deliver a talk and motivate them- PHN* |
| Antenatal education | * *We can start education from pregnancy time i.e., antenatal mothers, about vaccination and inform people in and around mainly adolescents and their parents- Gyn* |
| Health Education & Awareness | Community education | * *Education is important for community people to accept –PHN* |
| Educate on burden and importance | * *So, we should make them aware about its importance, burden - PHN* |
| Health education | * *Educate them so in that way we can create awareness. I think health education and creating awareness about the importance of protection from HPV are the first steps to improve coverage- JR* |
| Mindset of low-risk perception | * *They will have the mentality that it is a very rare disease, I won't get so any need of vaccination- JR* |
| Communication Channels | School-based promotions | * *Promotions through schools, initiating teachers to educate adolescents in addition to education - JR* |
| Media promotion | * *Continuous promotion through media, IEC, materials and, newspaper, and pamphlets – Gyn* |
| IEC materials, Rallies, OPD counselling | * *We are conducting rallies, distributing IEC material individually and educate the patients to come to other clinics OPDs and explain to them about HPV - PHN* |
| Patient stories for motivation | * *We are creating awareness through them (cervical cancer survivors), and they will explain the difficulties they face; this helps to motivate the public – PHN* |
| Involvement of Health Workers | Involve community health workers | * *ASHA, ANM and other community health workers can mobilise them - JR* |
| Effective communication by health workers, Training health workers | * *Communication is more important, from the health sector to the community, involving health workers, ASHA, ANM and other health care workers in the primary settings and making them more aware of the importance of vaccination, prevention and screening. So, they should know how to communicate it effectively- JR* |
| Promotion Platforms | Workplace screening programs | * *We should have regular checkups even at the workplace. Then it will be better for the society- PHN* |
| Promotion at Anganwadi’s, Screening camps, VHND promotion, Adolescent clinic promotion | * *In AWC also promote them, we can conduct camps, and also Creating awareness on VHND Day and also awareness creating at adolescent clinics, NCD clinic- JR* |
| Government Initiatives | Government policies and programs | * *First, there should be govt level policies and actions, then only people get interested and motivated* * *From the administration side, we should make vaccination as a schedule - JR* |
| Integration with routine immunization and Mandatory vaccination | * *If they start seeing with other regular routine immunisations, they will take it without resistance. if we give more voluntary options to take, it will be difficult in the beginning. Maybe we can improve uptake if we add that to our immunisation schedule and make it mandatory. – Gyn* |
| Evidence Generation | Local studies on side effects | * *Proper study in the local context should be done about side effects and publish in local media. it will help to build trust in patients, so it will be easy to push to the public- JR* |
| Repeated Messaging | Repeated Messaging | * *Repeated motivation and awareness generation are very important to improve the uptake of services – JR* |
| AGM- Adolescent girl mother, AG- Adolescent girl, Gyn- Gynaecologist, PHN- Public health nurse, JR- Junior resident | | |